Synthesis and Use as Spin Trapping Agents of Ester-Nitrones

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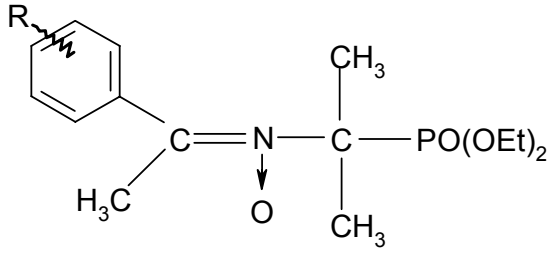
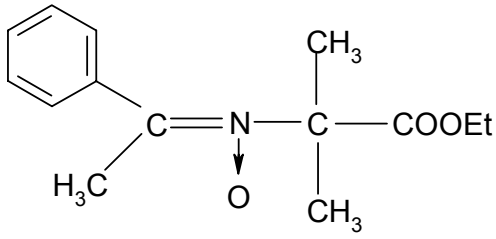
Until now, the nitrones are the most commonly used compounds for spin trapping experiments in chemical and biological systems. Many groups of researchers attempted to develop the synthesis of now spin traps. Their principal aims were to improve the efficiency of the spin trapping and the stability of the spin trapping adducts notably the superoxide one.

It was recently demonstrated that the presence of a phosphorylated or an ester group in β position improves the persistence of the superoxide adducts. [1]:



PPN-derivativos



EPPN

The ester-nitrone EPPN present some advantages compare to the phosphorylated spin traps. Its lipophilicity is relatively high, so it could eventually cross the cells membranes. Moreover, the EPR spectra of EPPN-adducts are simpler than the one obtained with the phosphorylated spin traps; they present only six lines and are not complicated by a conformational exchange.

These results induced us to develop the synthesis of new nitrones with many ester-groups in β-position in the aim to increase the performances obtained with EPPN and also their spin trapping kinetic. The spin trapping capacities of these new spin traps were studied and compared to the one obtained with EPPN.

[1] Roubaud, V., Lauricella, R., Tuccio, B. ; Bouteiller, J. C. ; Tordo, P. Res, *Chem. Intermed., 1996, 22, 405;* Roubaud, V.; Lauricella, R.; Bouteiller, J.C. and Tuccio, B. *Arch. Biochem. Biophys*., in press.